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ABSTRACT

This study explored how self-concept in arts-related areas could be integrated into Shavelson and Marsh's Hierarchical Model of Self-Concept. Undergraduate and graduate students (N=362) from a large midwestern university completed the Self Description Questionnaire III and a questionnaire assessing self-concept in music, art, dance, and drama. Confirmatory factor analyses and hierarchical confirmatory factor analyses were used to test a series of competing models based on previous studies by Marsh and Shavelson and other hypotheses. The results provided some support for Shavelson and Marsh's Hierarchical Theory of Self-Concept, but also highlighted weaknesses in the hierarchy. Consistent with prior research, most of the covariance among first-order factors was explained by the final hierarchy, and a third-order general self-concept factor was well-defined. Evidence also was obtained supporting prior findings that the second-order academic self-concept factor should be replaced by separate mathematics and verbal factors, and the second-order nonacademic self-concept factor should be replaced with separate physical/social and moral factors. An important new finding was that self-concept in the arts was best represented by a second-order factor on equal footing but distinct from academic and nonacademic self-concepts. One-half of the variance in the majority of first- and second-order factors was unexplained by higher-order factors in the model, suggesting that researchers and practitioners should continue to assess self-concept separately in different content areas. (Author/NB)

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Self-Concept in the Arts: How Does It Fit into the Shavelson/Marsh Model?

ED338992

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Abstract

The purpose of this study was to explore how self-concept in arts-related areas could be integrated into Shavelson and Marsh's Hierarchical Model of Self-Concept. Three-hundred-and-sixty-two undergraduate and graduate students from a large midwestern university completed the Self Description Questionnaire III and an investigator-designed 48-item questionnaire assessing self-concept in music, art, dance, and drama. Confirmatory factor analyses (CFA) and hierarchical confirmatory factor analyses (HCFA) were used to test a series of competing models based on previous studies by Marsh and Shavelson and hypotheses offered by the present investigators. The results provided some support for Shavelson and Marsh's Hierarchical Theory of Self-Concept, but also highlighted weaknesses in the hierarchy. Consistent with prior research, most of the covariance among first-order factors was explained by the final hierarchy, and a third-order general self-concept factor was well-defined. Evidence also was obtained supporting prior findings that the second-order academic self-concept factor should be replaced by separate math and verbal factors, and the second-order nonacademic self-concept factor should be replaced with separate physical/social and moral factors. An important new finding was that self-concept in the arts was best represented by a second-order factor on equal footing but distinct from academic and nonacademic self-concepts. In addition, we found that the parental relations first-order factor should be linked to the second-order moral factor rather than the second-order physical/social factor as suggested by prior research. However, as evident from the residual terms in the final and best fitting hierarchical model, half of the variance in the majority of first- and second-order factors was unexplained by higher-order factors in the model. These findings indicate that researchers and practitioners should continue to assess self-concept separately in different content areas.

Background

Achievement and self-perceptions of skills in the arts (e.g., music, art, dance, drama), although important to many individuals, have not attracted the attention of most educational and psychological researchers. The majority of research in intelligence and motivation, for example, has focused on the development and use of verbal and quantitative school-related skills. But there are signs that this focus is broadening. Gardner (1982, 1985) in his Theory of Multiple Intelligences identifies seven broad areas of intellectual ability, some of which relate directly to the arts. Self-concept researchers such as Shavelson, Hubner, and Stanton (1976), Marsh (1987) and Harter (1982) emphasize areas other than the familiar school-related verbal and quantitative skills that are important in forming and understanding individuals' self-concepts. While recent self-concept research has highlighted the multidimensional and complex nature of self-concept, "the arts" have not been explicitly incorporated into any recent theoretical model. The objective of this study was to investigate how self-concept in the arts might fit into one recent model, namely the Shavelson and Marsh's Hierarchical Theory of Self-Concept.

In the late 60s and mid-70s, there was controversy about whether self-concept consisted of one general or several specific factors. Coopersmith (1967) and Marx and Winne (1978) argued that facets of self-concept are so heavily dominated by a general factor that separate components could not be readily differentiated. In contrast, Soares and Soares (1977) argued that facets are so distinct that no general factor would predominate. Shavelson et al. (1976) reconciled these views to some extent by proposing a multifaceted and hierarchical structure of self-concept. In their original model, general self-concept is at the apex. The general self-concept is defined by academic and nonacademic components; the academic component is divided into self-concepts in particular areas (e.g., English and math); the nonacademic self-concept is divided into social, physical, and emotional self-concepts; and these components are divided into more specific facets. To investigate the validity of the Shavelson et al. model, Marsh developed the Self Description Questionnaires (SDQ, SDQ II, and SDQ III; c.f., Marsh, 1988). Results from several studies of preadolescents' self-concept using the SDQ (Marsh & Hocevar, 1985, Marsh & Shavelson, 1985, and Marsh, 1986) led Shavelson and Marsh (1986) to revise parts of the original model. Specifically, the second-order academic factor was replaced by two second-order academic factors: academic/math and academic/verbal, and nonacademic self-

concept consisted of a single second-order factor combining both social and physical self concepts. (Emotional self-concept was not examined).

In a subsequent study examining the structure of adult self-concept using the SDQ III, Marsh (1987) examined a series of theoretically-driven and logical variations of the Shavelson model. Four important findings emerged from this study. First, although several competing models provided comparably good fits to the data, the most parsimonious model replicated the three second-order factors from the preadolescent studies: academic/math, academic/verbal, and nonacademic/social-physical. Second, one competing and good fitting model posited a second-order "moral" nonacademic factor in addition to these three second-order factors. Third, the hierarchies tested, although moderately strong, were weaker than those tested in the studies of preadolescents. Finally, the general self-concept factor was strongly related to physical/social, and emotional self-concepts, but weakly related to academic and moral self-concepts.

Taken collectively, the findings from these studies support Shavelson's contention that self-concept is multifaceted and hierarchically structured, but suggest that the hierarchy is more complicated and weaker than originally proposed. The goals of the present study were to (a) explore effective ways to integrate self-concept in art-related areas (music, art, dance and drama) into the Shavelson/Marsh model, (b) assess the relationship between arts self-concept, general self-concept and self-concept in other areas, and (c) assess the influence of the addition of arts self-concept on the hierarchical pattern of the entire model.

Method

Subjects and Measures: Three-hundred-and-sixty-two undergraduate and graduate students from a large midwestern university completed the Self Description Questionnaire (SDQ III) and an investigator-designed 48-item questionnaire assessing self-concept in Music, Art, Dance, and Drama (12 eight-point true-false scale items were used for each area). The "arts" items were selected from an original pool of 86 piloted items that was content and factor analyzed for convergent/discriminant validity in another study (Vispoel, 1990). The SDQ III is a 136-item, 8-point true-false scale inventory assessing self concept in 13 areas: Math, Verbal, School in General, Problem-Solving, Physical Abilities, Physical Appearance, Same-Sex Relations, Opposite-Sex Relations, Parent Relations, Religion, Honesty, Emotion, and General Self-Esteem (See Marsh and O'Neill, 1984 for the actual items) The SDQ III and "arts" items were combined and systematically

interspersed in the same questionnaire. An exploratory factor analysis of the present data, based on three item clusters for each of the 17 scales (13 from the SDQ III and 4 from the arts self-concept inventory), identified a well-defined 17 factor structure. Alpha coefficients for the scales ranged from 0.736 (Honesty) to 0.959 (Dance), with a median of 0.911.

Analyses:

Confirmatory factor analyses (CFA) and hierarchical confirmatory factor analyses (HCFA) were used to test a series of competing models from Marsh (1987). Since no prior studies have integrated the arts into a comprehensive model of self-concept, we incorporated the arts scales into the tested models in several ways; (a) as a separate second-order factor, (b) as part of the academic portion of the model, and (c) as part of the nonacademic portion of the model. The models we tested are summarized in Table 1. Paralleling procedures employed by Marsh (1987), three item clusters were formed for each scale to create a 51 by 51 covariance matrix that was input into the mainframe computer program LISREL VII (Joreskog and Sorbom 1989) to test the fit of the models. Modification indices provided by LISREL 7 also were reviewed and formed the basis for inclusion of additional paths in some of the models.

Results

Goodness of fit indices for the tested models are given in Table 2; Path diagrams, factor loadings, and residuals for these models are given in Appendix 1. The null model, described in Table 1, is a model in which the 51 item clusters are assumed to be uncorrelated. As Table 2 shows, this model provided an extremely poor fit as evidenced by the chi-square value, chi-square/df ratio, LISREL goodness of fit index (GFI) and all other indices. This indicates that models with common factors would provide better fits to the data. Common first-order factor models based on the 17 scales used in this study are represented by models 1A (17 correlated factors) and 1B (17 uncorrelated factors). Although many indices are available (most of which appear in Table 2), recent studies (Marsh, Balla, & McDonald, 1988; Marsh & Balla, 1988) suggest that the Tucker-Lewis Index (TLI, in Table 2) provides the best means for evaluating the goodness of fit for first- and higher-order models. This index is unbiased, is relatively independent of sample size, and penalizes model complexity. In general, TLI values of .90 or higher indicate that model fit is adequate

(Marsh, 1990). Model 1A (17 correlated factors), as shown in Table 2, provided a remarkably good fit to the data (TLI = .950). This indicates that the first-order factors were very well defined. Model 1B, although providing a fair fit (TLI = .859), was considerably poorer than Model 1A.

The difference between Tucker-Lewis Index values for models 1A and 1B provides evidence supporting the existence of a hierarchical factor model. However, the strength of a given hierarchical model should not be evaluated exclusively in terms of the Tucker-Lewis index, because this index assesses the goodness of fit of the entire hierarchy including both first- and higher- order factors. The TC2 index, given in Table 2, is more suitable for evaluating hierarchical models, because it assesses the ability of second- and higher-order models (models 2A-9B in the present study) to explain the covariance among first-order factors (model 1A). This index has a minimum value of zero when no covariance is explained, and a maximum value of one when all covariance is explained.

As can be seen from the TC2 indices in Table 2, the most marked improvements in model fit occurred when moving from one to two second-order factors (2A versus 3A, 3B, and 3C), and from two to three second-order factors (3A, 3B, 3C versus 4A). These results (see figures in Appendix 1) indicate the at least three separate second-order factors should be included representing academic-, nonacademic-, and arts-related self-concepts. Model fit also was improved (see Table 2), although less dramatically, by replacing the academic second-order factor with two second-order factors--math and verbal (4A versus 6A and 5A versus 7A), and by replacing the nonacademic second-order factor with two second-order factors--physical/social and moral (4A versus 5A and 6A versus 7A).

It should be emphasized, however, that the second-order moral factor defined in model 7A is not equivalent to the second-order moral factor used in Marsh (1987), which appears in model 8A in the present study. The only difference between these two models is that the first-order parent factor in model 7A is linked to the second-order moral factor rather than to the second-order physical/social factor. The goodness of fit indices in Table 2 indicate that model 7A provides a better fit than model 8A, thus supporting the inclusion of the parent scale under the second-order moral factor. The final and best fitting factor model 9A (see Appendix 1) included five second-order factors, 1) math/academic, 2) verbal/academic, 3) physical/social, 4) moral, and 5) arts, and an additional path linking the first-order dance factor to the second-order physical/social factor. Models 4A through 9B also included a path linking the first-order problem solving factor and the

second-order arts factor. Although not reported in detail here, the inclusion of this path significantly improved the fit of each model.

The differences between the Tucker-Lewis index values for the A and B versions of models 4, 5, 6, 7, 8 and 9 can be compared to assess the extent to which the covariance among the second-order factors is explained by the superordinate third-order factor. As noted in Table 1, The B models are identical to the A models except that there is no third-order factor and the second-order factors are correlated. Since there are essentially no differences between the TLI values given in Table 2 for each pair of models, the inclusion of a superordinate general self-concept factor was supported.

The residuals (proportion of variance unexplained) for each factor in the given path models in Appendix 1, also can be used to evaluate the adequacy of the hierarchies. For brevity, the present discussion is restricted to the final model 9A. Despite the evidence described earlier that model 9A accounted for most of the "covariance" among first- and second-order factors, half of the "variance" in the majority of first- and second-order factors was unexplained by higher-order factors in the model. As evident from the residual terms, the hierarchy was best at accounting for variability in the first-order factors for math, verbal, school in general (ACAD), problem solving (PROB), physical appearance (APPR) and self- esteem (ESTIM) and for the second-order physical/social factor. Only 6.5%, 20.4%, 40.0% and 1.6% of the variance for the math, verbal, moral, and arts second-order factors respectively, was accounted for by the third-order general self-concept factor. These results indicate that there were substantial sources of unique but systematic variance in the majority of facets of self concept that could not be inferred from other facets in the model.

Summary and Conclusions

Taken as a whole, the present results provide some support for Shavelson and Marsh's Hierarchical Theory of Self-Concept, but also highlight weaknesses in the hierarchy. In each hierarchical model tested, most of the covariance among the first-order factors was accounted for by the given model, and the third-order general self-concept factor was well-defined. Moreover, consistent with Marsh (1987), the present study supported the separation of academic self-concept into verbal and math components, and the separation nonacademic self-concept into physical/social and moral components. The major new findings were that self-concept in the arts was best represented by a second-order factor on equal footing but separate from academic and nonacademic self-concepts and that the parent

first-order factor was more directly related to the second-order moral factor than to the second-order physical/social factor. However, as evident from the residual terms in the models, the final hierarchy was too weak to accurately predict most first-order or second-order self-concept factors from higher-order factors. This was especially true for the nonacademic- and arts-related first-order factors, and for the academic, moral, and arts second-order factors. These findings strongly indicate that researchers and practitioners should continue to assess self-concept separately in different content areas.

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Table 1
Descriptions of the CFA and HCFA Models Tested

Model	Description
Null	51 uncorrelated first-order factors
1A	17 correlated first-order factors and no higher-order factors
1B	Same as 1A except that all factors are uncorrelated
2A	One second-order factor defined by all 17 first-order factors
3A	Two correlated second-order factors (Arts and Nonarts)
3B	Two correlated second-order factors (Arts/Academic and Nonacademic)
3C	Two correlated second-order factors (Arts/Nonacademic and Academic) .
4A	Three second-order factors (Academic, Nonacademic, and Arts) and one thir order (general) factor
4B	Same as 4A except that there is no third-order factor, and the second-order factors are correlated
5A	Four second-order factors (academic, physical/social, moral, and arts) and one third-order (general) factor
5B	Same as 5A except that there is no third-order factor and the second-order factors are correlated
6A	Four second-order factors (academic/math, academic/verbal, nonacademic, and arts) and one third-order (general) factor
6B	Same as 6A except that there is no third-order factor, and the second-order factors are correlated
7A	Five second-order factors (academic/math, academic/verbal, physical/social, moral, and arts) and one third-order (general) factor
7B	Same as 7A except that there is no third-order factor and the second-order factors are correlated
8A	Five second-order factors (academic/math, academic/verbal, physical/social, moral, and arts) and one third-order (general) factor. This model is same as 7A except that Parental Relation is used to define the second-order Physical/Social factor instead of Moral factor.
8B	Same as 7A except that there is no third-order factor and the second-order factors are correlated
9A	Five second-order factors (academic/math, academic/verbal, physical/social, moral, and arts) and one third-order (general) factor. This model is same as 7A except that Dance is used to define both Physical/Soci and Arts second-order factors.
9B	Same as 7A except that there is no third-order factor and the second-order factors are correlated

Table 2
Goodness of Fit Indices for Models Tested

Model	χ^2(df)	χ^2/df	GFI	AGFI	RMS	TLI	BBI	TC1	TC2*
Null	18348(1275)	14.419	.238	.208	.248	.000	.000	- - - -	- - - -
1A	1823(1088)	1.676	.837	.802	.038	.950	.901	1.00	1.00
1B	3535(1224)	2.888	.663	.635	.193	.859	.808	.516	.000
2A	2603(1207)	2.157	.769	.746	.099	.914	.858	.700	.544
3A	2467(1206)	2.046	.784	.762	.088	.922	.866	.739	.624
3B	2410(1206)	1.998	.782	.761	.094	.926	.869	.756	.657
3C	2379(1206)	1.973	.787	.766	.091	.927	.871	.766	.675
4A	2228(1203)	1.852	.806	.786	.077	.937	.879	.818	.763
4B	2220(1201)	1.848	.806	.786	.075	.936	.879	.821	.768
5A	2194(1202)	1.825	.809	.789	.076	.939	.880	.831	.783
5B	2158(1193)	1.809	.812	.791	.071	.940	.882	.845	.804
6A	2169(1201)	1.806	.811	.791	.075	.940	.882	.840	.798
6B	2165(1196)	1.804	.811	.790	.073	.940	.822	.845	.805
7A	2136(1200)	1.780	.814	.794	.074	.942	.884	.853	.817
7B	2097(1186)	1.768	.816	.795	.069	.943	.886	.877	.840
8A	2154(1200)	1.795	.812	.792	.075	.941	.883	.846	.807
8B	2105(1186)	1.775	.815	.794	.071	.942	.885	.866	.835
9A	2112(1199)	1.761	.815	.796	.071	.943	.885	.863	.831
9B	2076(1185)	1.752	.818	.796	.066	.944	.887	.878	.852

*Description of the indices:

χ^2/df The ratio of the chi-square (χ^2) to the degrees of the freedom (df).

GFI The Goodness of Fit Index is a measure of the relative amount of variances and covariances jointly accounted for by the model and varies between 0 and 1 (Joreskog & Sorbom, 1981, pp. 1.40-41).

AGFI The Adjusted Goodness of Fit Index is similar to the GFI, but is adjusted for the number of parameters that are estimated (Joreskog & Sorbom, 1981, pp. 1.40-41).

RMS The Root Mean Square residual is a measure of the average of residual variances and covariances for the originally measured variables (Joreskog & Sorbom, 1981, pp. 1.41).

TLI The Tucker-Lewis Index is: [N/dfn-T/dft]/[N/dfn-1] where N/dfn and T/dft are the χ^2/df ratios for the null model and the model being tested.(see Bentler & Bonett,1980).

BBI The Bentler-Bonett Index is: 1-T/N where N and T are the χ^2 values for the null model and the model to be tested (see Bentler & Bonett,1980).

TC1 The Target Coefficient, a measure of a higher order model's ability to explain the covariation among first-order factors, is: F/T where F and T are χ^2 values for the first-order model in which all factor covariations are estimated (model 1A) and the higher order model being tested (see Marsh & Hocevar, 1985). TC1 varies between 0 and 1 but its lower limit is F/FU where FU is the χ^2 of the first-order model in which all the factor covariances are constrained to be zero (model 1B; see description of TC2)

TC2 This Target Coefficient, also a measure of a higher order model's ability to explain the covariation among first-order factors, is: (FU-T)/(FU-F), where FU, T and F are defined as in TC1. TC2 also varies between 0 and 1, but when FU and T are the same TC2 will be zero, whereas TC1 will be F/FU.

Note: The description of the indices was adapted from Marsh (1987).

Appendix 1

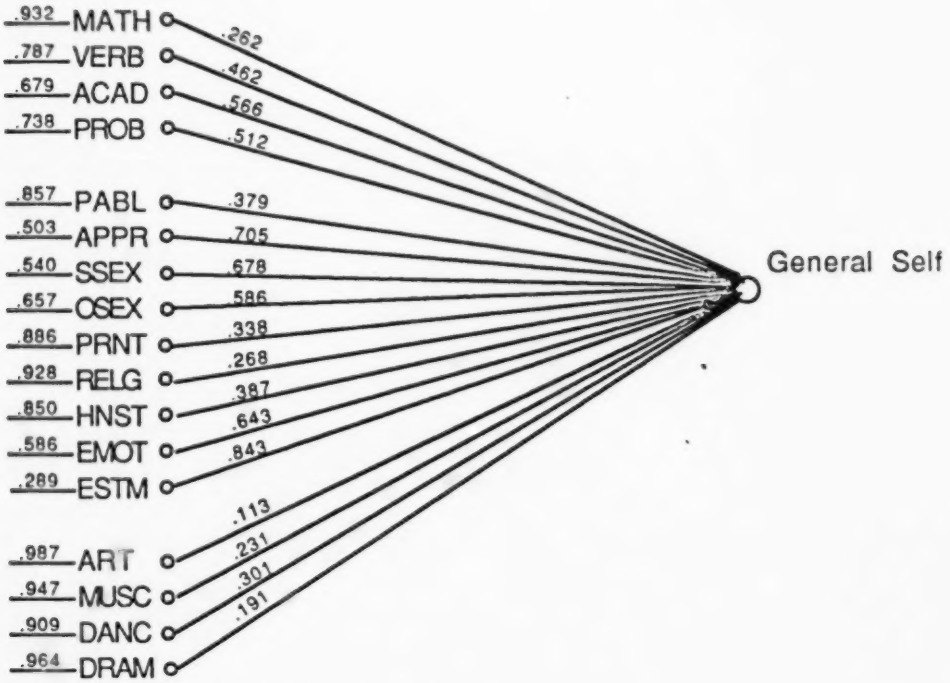
Path Diagrams for Selected Models

Information About the Path Diagrams

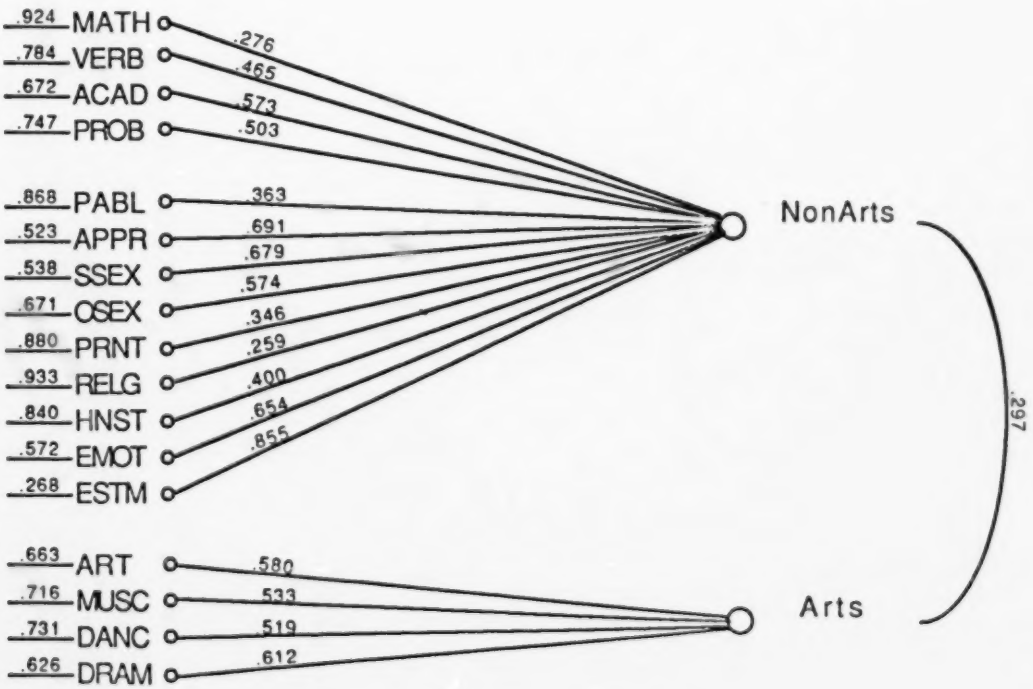
Abbreviation	Self-Concept Area
VERB	Verbal skills
MATH	Mathematical skills
ACAD	General school ability
PROB	Problem solving skills
PABL	Physical ability
APPR	Physical appearance
SSEX	Same-sex relationships
OSEX	Opposite-sex relationships
PRNT	Parental relationships
HNST	Honesty
EMOT	Emotional stability
ESTM	Self-esteem
ART	Art-related Skills (drawing, painting, etc.)
MUSC	Musical Ability
DANC	Dancing Ability
DRAM	Dramatic Skills

Closed lines (o-o) represent path coefficients (correlations).
Open lines (-) represent residual terms (proportion of unexplained variance).

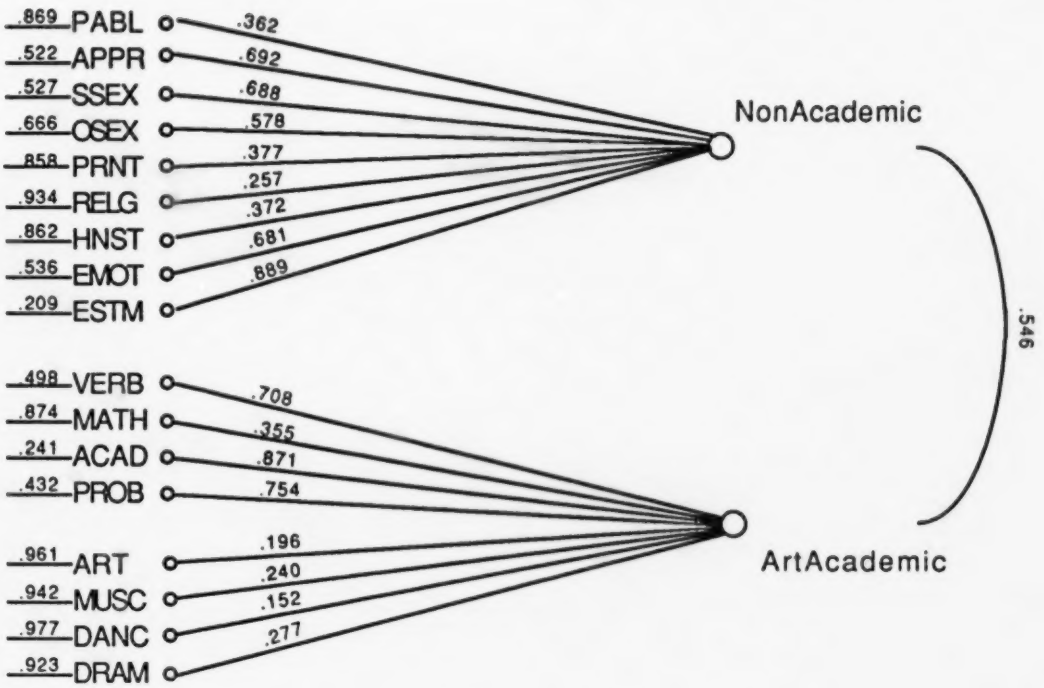
A path from the second-order arts factors to the first-order problem solving facto (PROB) was included in models 4A, 5A, 6A, 7A, 8A, 9A (pictured) and 4B, 5B, 6B, 7 (not pictured) because this path significantly improved the fit of each model. . The same was true for the path linking the second-order physical/social factor and first-order dance factor in model 9A.



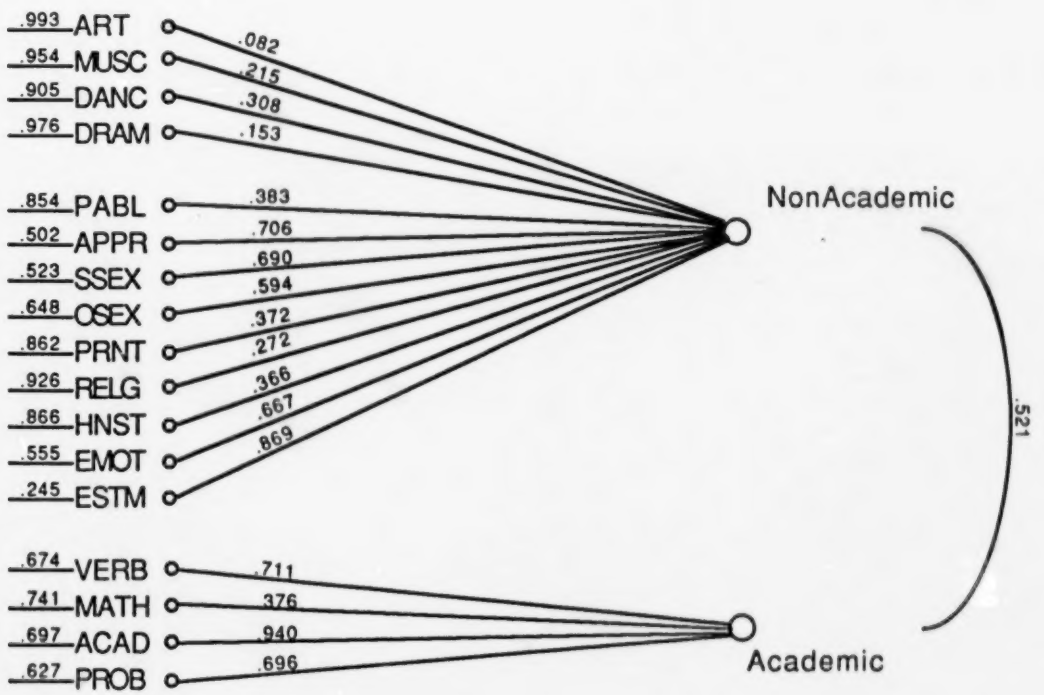
Model 2A $\chi^2(1207)=2603$



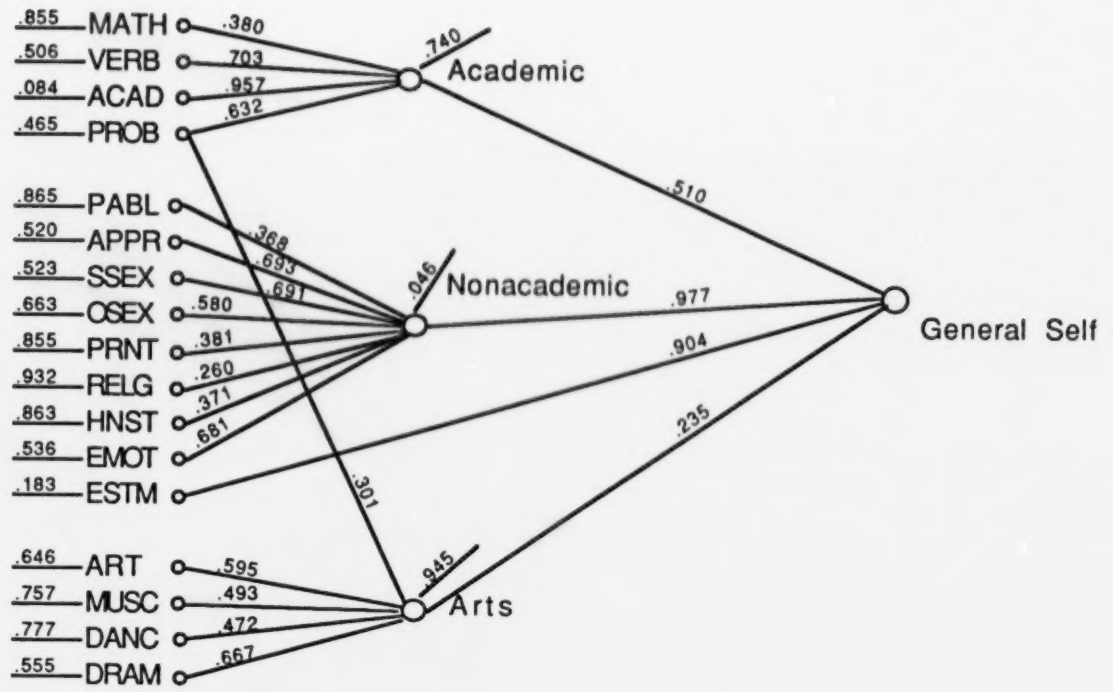
Model 3A $\chi^2(1206)=2467$



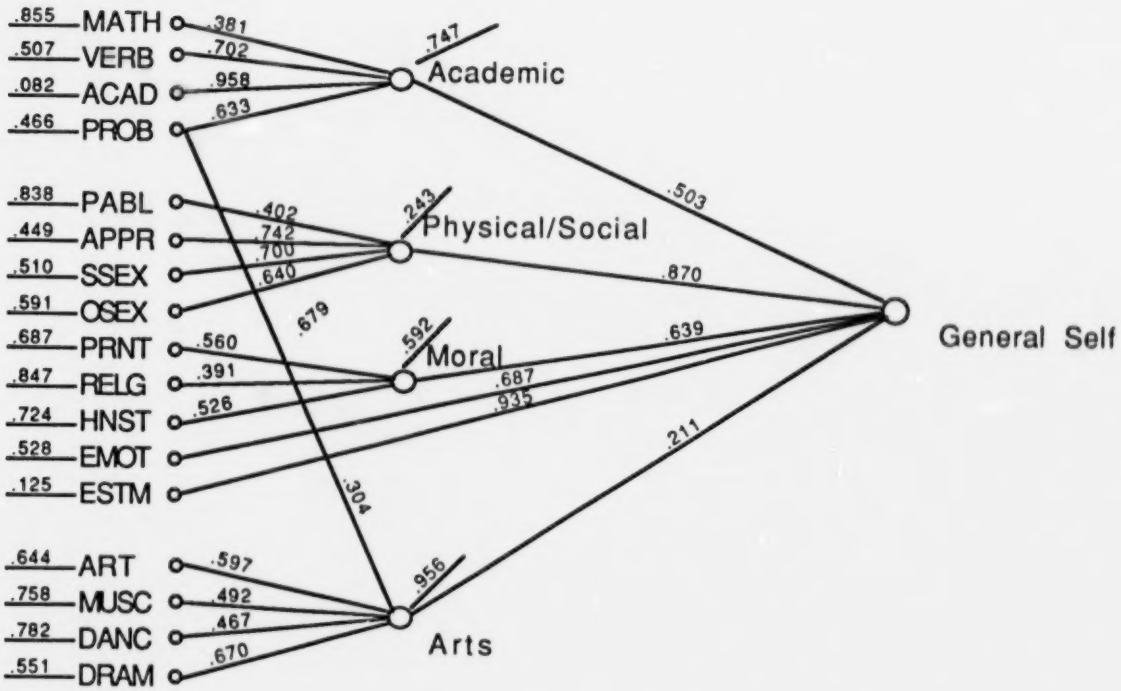
Model 3B $\chi 2(1206)=2410$



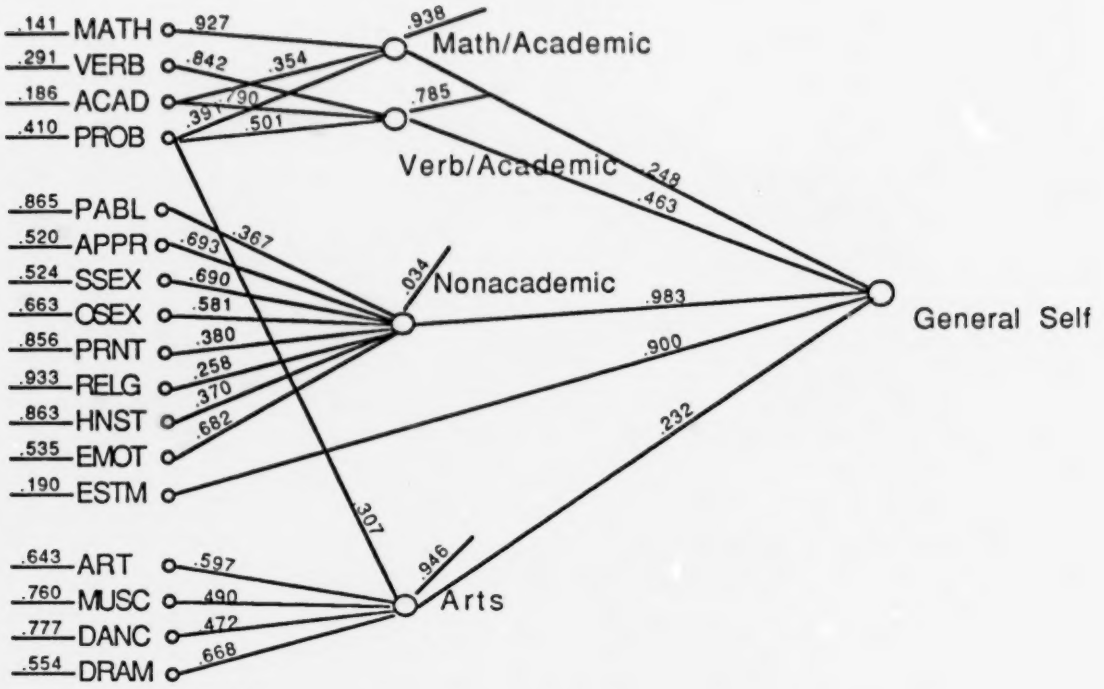
Model 3C $\chi 2(1206)=2379$



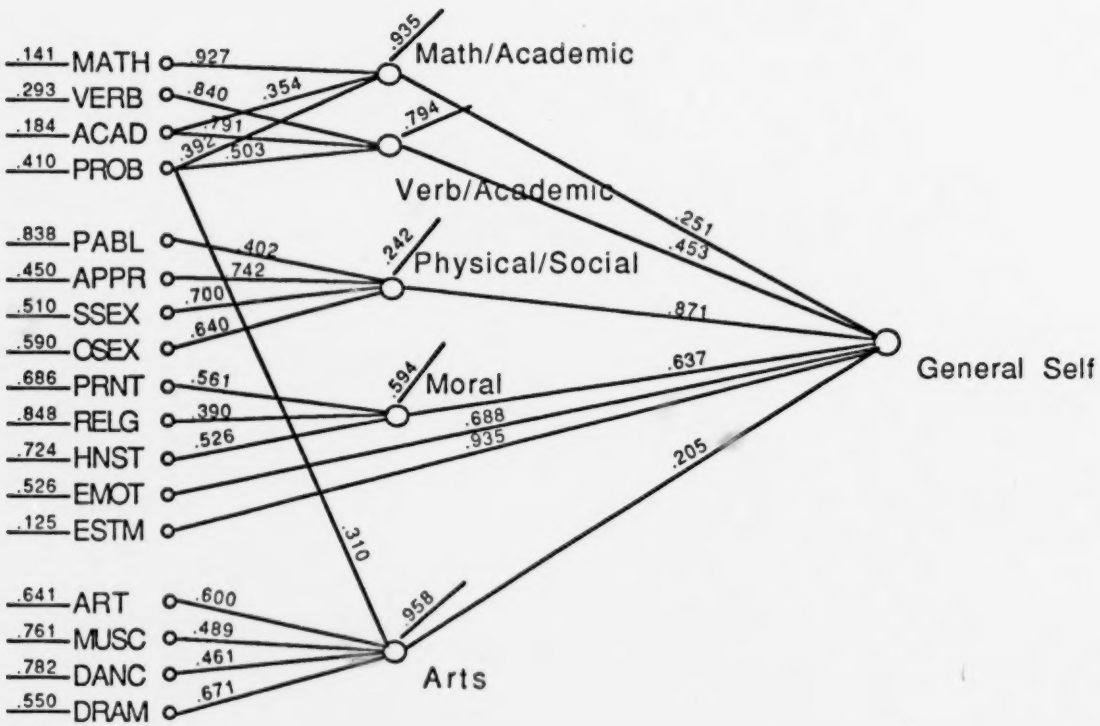
Model 4A $\chi 2(1203)=2228$



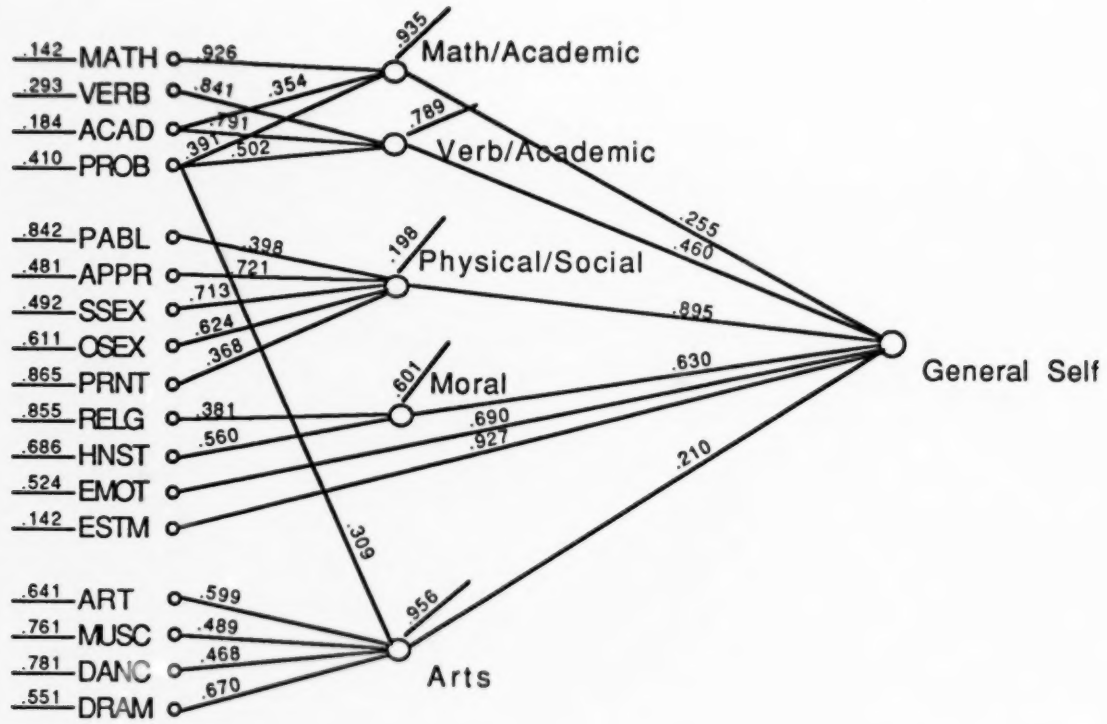
Model 5A $\chi 2(1202)=2194$



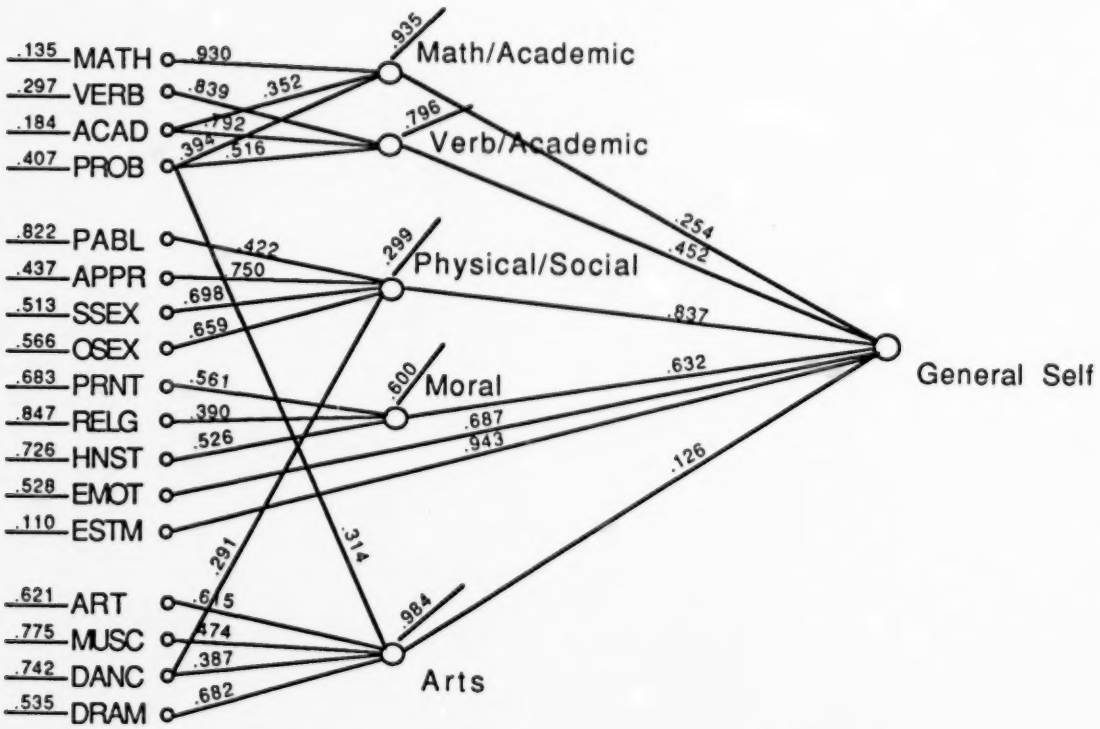
Model 6A $\chi^2(1201)=2169$



Model 7A $\chi^2(1200)=2136$



Model 8A $\chi^2(1200)=2154$



Model 9A $\chi^2(1199)=2112$